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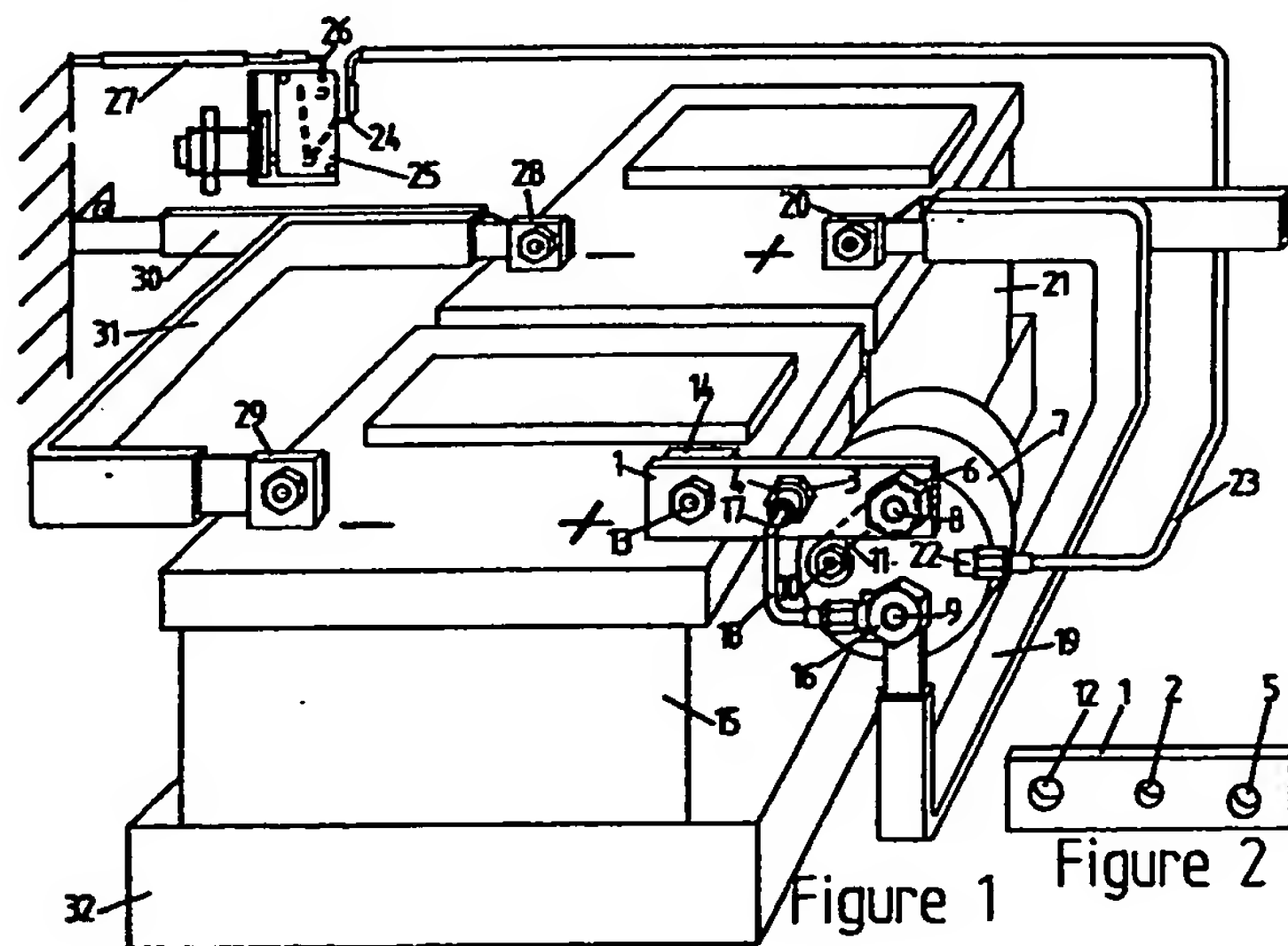
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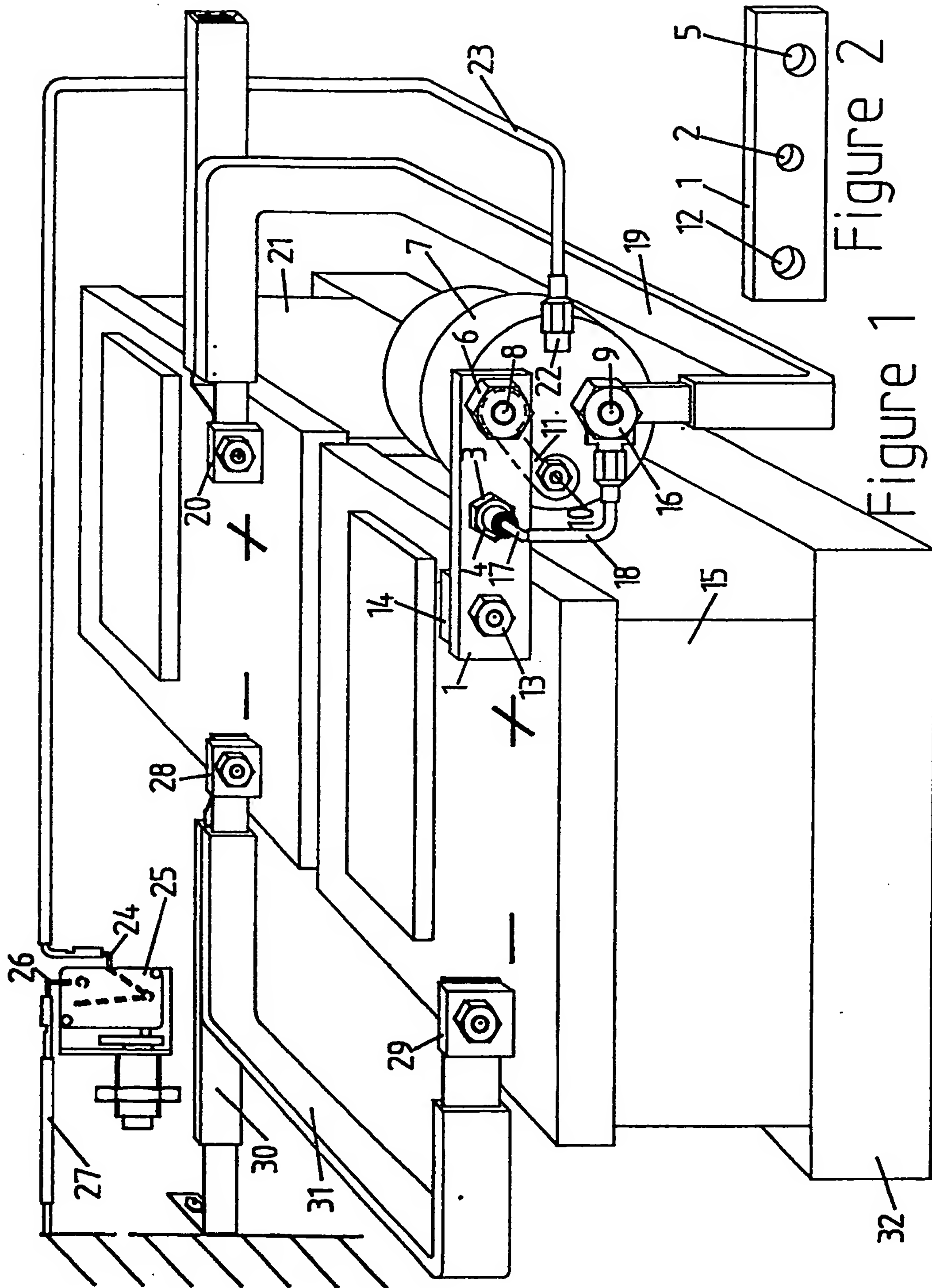
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(54) Add-on vehicle starting aid

(57) An "add-on" automotive electrical apparatus for quick and easy installation in the majority of motor vehicles provides a push button "Instant Jump Start" facility, should the vehicle fail to start due to its main battery 21 becoming flat or discharged. A flat conducting copper bus-bar strip 1 provided with apertures 2, 5, and 12, enables quick and easy bolting 13 to the terminal 14, of an auxiliary battery 15, and also supports a rectifier 4, and a heavy duty solenoid relay switch 7, provided with a coil connection 22, for connecting to a remote momentary switch 25 and a contact terminal 9 for connection to the main battery 21. Closure of the switch 25 energises the relay coil thereby closing the relay switch contacts 8, 9 to shunt the rectifier 4, thus connecting the auxiliary battery 15 in parallel with the main battery 21.



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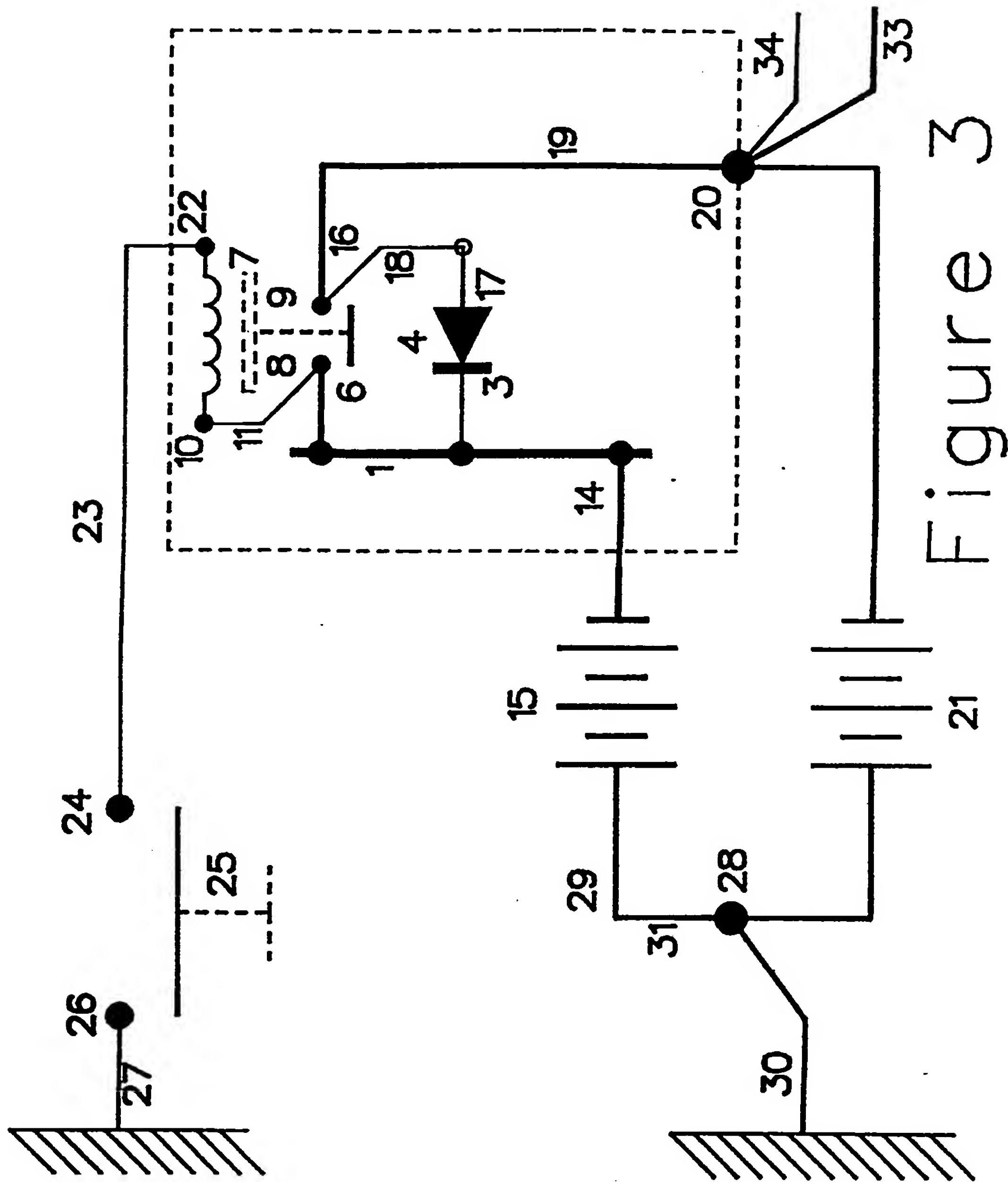


Figure 3

DESCRIPTION OF INVENTION:

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"INSTANT JUMP START" ADD-ON AUTOMOTIVE ELECTRICAL APPARATUS

THE PRESENT INVENTION relates to an "Add-on" Automotive electrical apparatus that is suitable for installation in the majority of motor vehicles (that are provided with electric starter motors), and provides an "Instant Jump Start" facility, should the vehicle fail to start, due to its main battery becoming flat (or discharged). Vehicle batteries frequently go flat when the ignition, the radio, carphone, lights and/or heating/electrical equipment is left on without the engine running. A flat battery can lead to inconvenience and delay for motorists, who may try to push start the vehicle (not practical with automatic transmission, and/or heavy vehicles), or use jump leads to connect up to a charged battery usually on another vehicle, or wait up to a few hours for Motor Rescue Services. Even if one has the foresight to carry a "spare battery" and jump leads in the boot, there is still a delay and the inconvenience of getting ones hands dirty, by having to open and close the boot and bonnet, connect up the leads, and then put everything away (not to speak of the possibility of finding the spare battery flat as well, especially if no recharging facility exists).

One of the objects of the present invention is to overcome the above delays and inconveniences by enabling a vehicle with a flat main battery to be restarted without leaving the drivers seat merely by engaging a momentary switch on the dash board and turning the ignition key.

Although patent applications have been filed in the past to enable a vehicle to be restarted from the driving seat, the embodiments described have incorporated complicated circuits and complicated switching arrangements which also involved interfering with and modification of the existing circuit and switching arrangements of the motor vehicle, making their installation in most vehicles difficult and/or impractical.

Furthermore the state of the art did not exist for a ready to use "add-on" apparatus that could be quickly and easily installed in a specialist garage "while you wait", nor fitted on a D.I.Y. basis in the majority of motor vehicles. Also the technology did not cater for an "off the shelf" "add-on" apparatus that could be made available from shops, and/or easily offered by Motor Vehicle Manufacturers as an optional extra.

The present invention by its novel busbar strip design and simplified non-interfering circuit arrangement overcomes the shortcomings outlined above, and provides the technology for an add-on apparatus that is practical, quick and easy to install in the majority of motor vehicles, and without interference and/or modification to the vehicle's existing switching circuits and/or fuse circuits.

The state of the art demonstrated in the present invention makes it practical to offer an "add-on" "Instant Jump Start" apparatus for off the shelf sale to the Automotive trade, for use by D.I.Y. motorists, or for fitting while you wait at specialist and general garages and also by Motor Vehicle Manufacturers, who may choose to include the "add-on" "Instant Jump Start" apparatus both as an optional extra and as a standard issue for their top of the range vehicles.

According to the present invention there is provided an add-on automotive electrical apparatus comprising an electrically conductive bus-bar strip on to which is secured and electrically connected the cathode of a rectifier, wherein said strip is secured and electrically connected to one contact terminal of a solenoid relay switch; wherein said relay switch is normally open and provided with a pair of contacts which are of sufficient capacity to carry the electric starter motor current of a motor vehicle; wherein one end of the coil of the said solenoid relay is also electrically connected to the said strip or contact terminal; wherein said bus-bar strip is also provided with means to enable it to be mounted and secured and electrically connected to the positive terminal of a secondary rechargeable motor vehicle battery; wherein the other contact terminal of the said relay switch is electrically connected to the anode of the said rectifier, which together with said other contact terminal is provided with means for electrical connection to the positive terminal of the rechargeable motor vehicle main battery; wherein the other end of the said coil is provided with means for electrically connecting it to a manually operable momentary switch (spring biased to be normally off or open) suitable for installation within reach of the vehicle's driver.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:-

FIGURE 1 is a perspective embodiment of the invention.

FIGURE 2 is an embodiment of the add-on bus-bar referred to in the description.

FIGURE 3 is an electric circuit diagram of the embodiments of this invention. The dotted rectangle, shown on Figure 3, encompasses the add-on components mentioned in Claim 1.

Referring to the drawings, there is provided a flat conducting copper busbar strip, 1, provided with an aperture, 2, through which is secured and electrically connected the cathode, 3, of a rectifier, 4. The copper busbar strip, 1, is provided with a second aperture, 5, through which is secured and connected the first contact terminal, 6, of a solenoid relay switch, 7, provided with a pair of "normally open" contacts 8 and 9, which are of sufficient capacity to carry the electric starter motor current of the vehicle. One end, 10, of the coil of the said solenoid relay 7, is also connected to the said copper busbar strip 1, by means of the connecting link 11, and the first contact terminal 6.

The said copper busbar strip, 1, is also provided with a third aperture, 12, to enable it to be mounted and secured by the nut and bolt, 13, and electrically connected to the positive terminal, 14, of a secondary rechargeable motor vehicle battery, 15. The second contact terminal, 16, of the said relay, 7, is connected to the anode, 17, of the said rectifier, 4, by means of a (preferably insulated) connecting lead, 18.

The second contact terminal, 16, of the solenoid relay, 7, is also provided with a heavy duty cable, 19, for connecting to the positive terminal, 20, of the existing rechargeable motor vehicle main battery, 21. The other end, 22, of the coil, of the said solenoid relay, 7, is provided with an insulated lead, 23, for connecting it to the first contact, 24, of a remote momentary manually operable switch, 25, (spring biased to be normally off or open) suitable for installation within reach of the vehicle's driver. The second contact, 26, of the remote momentary manually operable switch, 25, is connected via earthing lead 27, to the vehicle chassis. The negative terminal, 28, of the motor vehicle main battery, 21, which is already connected via heavy duty lead 30 to the chassis of the motor vehicle, is also connected to the negative terminal, 29, of the secondary battery, 15, by means of the heavy duty lead, 31.

Preferably, a dual tray, 32, is provided to secure and support both the said secondary battery, 15, and also the said existing battery, 21, of the vehicle, together with means to secure said dual tray, 32, to the chassis of the vehicle.

Alternatively, if there is insufficient space adjacent to the existing rechargeable main battery, 21, of the vehicle, a single tray is provided to secure and support the said rechargeable secondary battery, 15, together with means to secure said single tray to the chassis of the vehicle in the nearest convenient available space in the vehicle.

The existing heavy duty lead, 33, shown provides current to the vehicle's existing starter motor circuit. Also the existing medium duty lead, 34, shown typically, provides the positive connection to the alternator and all the other circuits connected to the positive terminal of the existing vehicle main battery, 21.

It should be understood that the above description applies to vehicles with a negative earthed chassis. However, it is within the scope of this invention that by reversing all the polarities mentioned above the invention may also be used on vehicles having a positive earthed chassis.

CLAIMS:-

1. An add-on automotive electrical apparatus comprising an electrically conductive bus-bar strip on to which is secured and electrically connected the cathode of a rectifier, wherein said strip is secured and electrically connected to one contact terminal of a solenoid relay switch; wherein said relay switch is normally open and provided with a pair of contacts which are of sufficient capacity to carry the electric starter motor current of a motor vehicle; wherein one end of the coil of the said solenoid relay is also electrically connected to the said strip or contact terminal; wherein said bus-bar strip is also provided with means to enable it to be mounted, secured and electrically connected to the positive terminal of a secondary rechargeable motor vehicle battery; wherein the other contact terminal of the said relay switch is electrically connected to the anode of the said rectifier, which together with said other contact terminal is provided with means for electrical connection to the positive terminal of the rechargeable motor vehicle main battery; wherein the other end of the said coil is provided with means for electrically connecting it to a manually operable momentary switch (spring biased to be normally off or open) suitable for installation within reach of the vehicle's driver.

2. An add-on automotive electrical apparatus as claimed in claim 1 wherein said apparatus includes the said manually operable momentary switch and insulated connecting wire and means for electrically connecting one contact of the said manually operable switch with the said coil of the said solenoid relay switch, and means to electrically connect the other contact of the said manually operable switch with the chassis of the vehicle or negative terminal of the said main battery of the vehicle.

3. An add-on automotive electrical apparatus as claimed in claims 1 and 2, wherein said apparatus includes the said rechargeable secondary battery, said secondary battery being suitable to satisfy the available space and electric starting requirements of the motor vehicle, including means for electrically connecting the negative terminal of said rechargeable secondary battery to the chassis or negative terminal of the main battery of the vehicle.

4. An add-on automotive electrical apparatus as in claims 1, 2, and 3 wherein said apparatus includes a single tray to secure and support the said rechargeable secondary battery, together with means to secure said battery to said single tray.

5. An add-on automotive electrical apparatus as in claims 1, 2, and 3 wherein said apparatus includes a dual tray to secure and support both the said secondary battery and also said main battery of vehicle together with means to secure both said batteries to said dual tray.

6. An add-on automotive electrical apparatus, as in claims 4 or 5, wherein said apparatus includes means to secure the battery tray to chassis of vehicle.

7. An add-on automotive electrical apparatus as in claims 1 to 6 wherein said apparatus includes means for electrically connecting the negative terminal of the secondary battery to negative terminal of the main battery, and also a separate means for electrically connecting the positive terminal of the main battery with said other contact terminal of the said solenoid relay switch.

8. An add-on automotive electrical apparatus as in claims 1 to 7, wherein all the electrical polarities are reversed to enable said apparatus to be used on vehicles wired up for a positively earthed vehicle chassis.

9. An add-on automotive electrical apparatus, as in all the above claims, wherein said conductive bus-bar strip is manufactured in copper.

10. An add-on automotive electrical apparatus, as in all the above claims, wherein said conductive bus-bar strip is substantially flat.

11. An add-on automotive electrical apparatus, as in all the above claims, wherein said conductive bus-bar strip is provided with apertures to facilitate the mounting of all components secured and electrically connected to said strip.

12. An add-on automotive electrical apparatus substantially as described herein with reference to and as illustrated in the accompanying drawings.